

Real-time Adherence Patterns in Persons Starting Oral Antiretrovirals Support Baseline Management of Depression, Methamphetamine Use, Homelessness and Real-time Adherence Interventions

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General

Category: B2: Diagnostic and monitoring tools

Country of research: United States

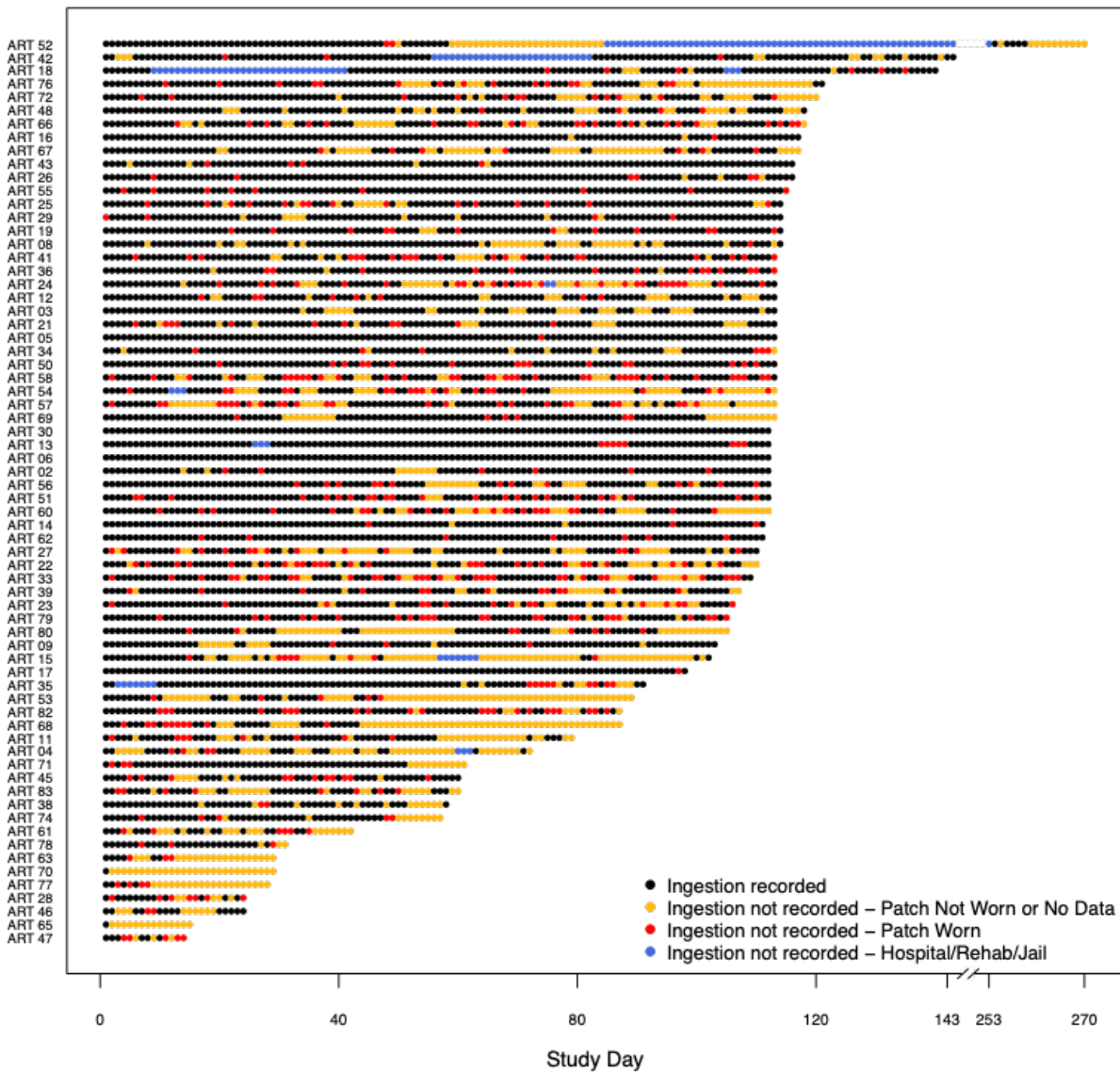
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Abstract Text (max 350 words)

Background: Early identification of persons starting oral antiretroviral (ARV) treatment who need personalized support is limited. We captured real-time daily adherence in persons starting ARVs, analyzing dosing patterns and their associations with detailed baseline characteristics.

Methods: The real-time adherence behavior pattern was captured using FDA-approved digital-health-feedback system (DHFS) with ingestible-sensor-enabled ARVs in persons starting oral ARVs for 16 weeks. Baseline demographics, urine toxicology and self-report questionnaires were obtained. Kaplan-Meier Estimate evaluated persistence on study. Dot-plot captured individual patterns of daily medication taking; Spearman’s rho and permutation tests analyzed dose taking patterns. Mixed-effects logistic regression, with multiple imputation, modeled characteristics associated with treatment adherence.

Results: Sixty-eight participants, 83.8% male, average age 38.8 years, 64.7% White, 23.5% Black race, 36.8% Hispanic ethnicity, were followed for 112 days median (14 -270) generating 6634 observation days. Persistence on study (surrogate for retention in care) for 16 weeks was 48.5%, with methamphetamine use (HR=2.48; CI₉₅ 1.21, 5.07; p=0.015), depression PHQ-8 (HR=1.08; CI₉₅ 1.01, 1.15; p=0.020) and greater life chaos (HR=1.12; CI₉₅ 1.05, 1.21; p=0.002) predictors of early dropout. Figure 1 shows dot-plot of individual participant daily medication taking patterns (legend insert provides color code). Missed doses occurred on consecutive days, mean 1.36 days, p<0.001. The likelihood of daily confirmed doses was higher in the absence of baseline depression, methamphetamine use and homelessness (see Table 1).



<p>Table 1: Factors associated with daily confirmed doses, longitudinal mixed-effects logistic regression. Subject-specific odds ratios (ORs) and 95% confidence intervals (CI₉₅) reported. Results with p<0.04 are in bold.</p>	<p>Single-predictor model</p>	<p>Multi-predictor model with backward model selection, p<0.15</p>
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	Odds ratio (CI ₉₅)	P-value	Odds ratio (CI ₉₅)	P-value
Time on study, per 1 week	0.896 (0.884, 0.908)	< 0.001	0.896 (0.884, 0.908)	<0.001
Housing: Unhoused (ref) Vs Stable	3.613 (1.680, 7.770)	0.001	2.107 (1.089, 4.077)	0.027
English Basic (ref) vs Advanced	2.901 (1.378, 6.107)	0.005	1.884 (1.030, 3.448)	0.040
Medical insurance No (ref) vs Yes	3.407 (1.398, 8.302)	0.007	2.355 (1.158, 4.790)	0.018
UTOX Methamphetamine Pos (ref) vs Neg	4.926 (2.349, 10.33)	<0.001	2.041 (1.039, 4.009)	0.038
Questionnaires: PHQ-8, per 1 score	0.873 (0.811, 0.939)	<0.001	0.913 (0.856, 0.973)	0.005
Life chaos, per 1 score	0.846 (0.791, 0.906)	<0.001	---	

PHQ-8=Patient Health Questionnaire (8-items).

Conclusions: Real-time adherence patterns in persons starting oral ARV treatment verified missed doses occurred on consecutive days supporting real-time adherence interventions, and confirmed baseline methamphetamine use, depression and homelessness impact adherence early in treatment.

Additional questions

Ethical research declaration: Yes

IAS digital learning platform

IAS+: Quality of care, Person-centred care, HIV treatment

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